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# SURVEY BULLETIN

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Forest Insect and Disease Conditions in Ontario  
Spring 1995



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# FOREST INSECT AND DISEASE CONDITIONS IN ONTARIO

Spring 1995

This is the first of three bulletins issued annually by the Forest Insect and Disease Survey (FIDS) Unit of Natural Resources Canada. The second bulletin, scheduled for early August, will present the results of field surveys conducted from early May to mid-July; the third bulletin, scheduled for early December, will contain the results of surveys conducted between mid-July and late September.

## FIELD ASSIGNMENTS

There are four changes in field assignments for 1995. Tim Bouwmeester will conduct surveys in the Fort Frances area of the Northwest Region, while Paul Bolan will move from Fort Frances to Sudbury to carry out surveys in that part of the Central Region. Barry Smith will transfer to Kemptville in the Southern Region, and Ed Czerwinski will take over surveys in the Kapuskasing area of the Northeast Region. A complete list of ranger field assignments is provided elsewhere in this bulletin.

## MAJOR INSECT FORECASTS FOR 1995

Brief summaries of the status of major pests in 1994 and population forecasts for 1995 are included below as reminders for the coming season.

### FOREST INSECTS

#### **Eastern Spruce Budworm, *Choristoneura fumiferana* (Clem.)**

The gross area affected by eastern spruce budworm in 1994 declined by some 53% to 4,266,656 ha. Most of this decline occurred east of Lake Nipigon in the Nipigon, Hearst, and Wawa districts, where large areas of defoliation broke into numerous small, scattered pockets. Although the overall affected area declined, large blocks of defoliation persisted west of Lake Nipigon in the Thunder Bay, Dryden, Sioux Lookout, Kenora, Red Lake, and Fort Frances districts.

In northeastern Ontario, a small infestation near Warren on the Sudbury-North Bay district boundary increased in size. There was also an increase in the area affected in the northeast corner of the Algonquin Park District. Increases were recorded as well in small white spruce (*Picea glauca* [Moench] Voss) plantations in the Kemptville

and Midhurst districts in southern Ontario.

Egg-mass sampling to forecast 1995 population trends was carried out at 437 locations in late summer 1994. Of these, 332 locations were also sampled in 1993. A comparison of locations sampled both years showed little change in overall egg-mass densities. Analysis of these results indicates that while populations may continue to decline in the Northwest Region, tree mortality in damaged stands will probably increase. Budworm populations will likely increase or remain steady in the Central Region (Sudbury, North Bay, and Algonquin Park districts), and will probably persist at similar levels in southern Ontario.

#### **Jack Pine Budworm, *Choristoneura pinus pinus* Free.**

Jack pine budworm populations increased in 1994. The total area of moderate to severe defoliation reached

419,344 ha, up from 282,247 ha the previous year. Most of the defoliation occurred in the northern Parry Sound and southern Sudbury districts, but there were also sizeable pockets of damage around the west end of Lake Nipissing in the North Bay District. Small pockets of defoliation were mapped in the Pembroke, Algonquin Park, Timmins, Temagami, and Sault Ste. Marie districts.

Egg-mass sampling to forecast population trends was carried out at 221 locations. Of these, 203 were also sampled in 1993. Comparison of egg-mass densities at locations common to both years revealed an overall decline of 21%. Based on these results, infestations are expected to persist in the most severely affected areas of the Sudbury and Parry Sound districts, but there will probably be a decline in the total area infested. High budworm populations will probably persist in localized areas in the Timmins and Sault Ste. Marie districts.

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Cover photo: Collecting foliage for eastern spruce budworm egg-mass surveys.



In the Northwest Region there was a slight increase in egg-mass densities. This may result in light defoliation in a few areas. However, widespread, significant damage is not expected in this part of the province in 1995.

#### **Gypsy Moth, *Lymantria dispar* (L.)**

In 1994, the total area of moderate to severe defoliation declined to 5,645 ha. This was the smallest area of damage recorded since 1982. Nearly all of this defoliation (5,543 ha) was mapped in the Sudbury District, mainly south and east of the city of Sudbury. The remainder of the defoliation occurred in the Aylmer District, in the Pinery Provincial Park, and southeast of Court-right in Moore Township.

No gypsy moth egg-mass surveys were conducted in Ontario in 1994. As such, there is no data upon which to base forecasts. However, given that gypsy moth populations in 1994 were at their lowest level in many years, and considering historical trends, it is expected that populations will begin to rise in 1995 or 1996.

#### **Forest Tent Caterpillar, *Malacosoma disstria* Hbn.**

Forest tent caterpillar populations collapsed in 1994. Infestations that occurred in the Sudbury, North Bay, Bancroft, Kemptville, and Tweed districts in 1993 disappeared in 1994. Only occasional colonies and single larvae were found and no significant defoliation was observed. The only remnant infestation was in adjacent areas of the Cochrane and Hearst districts. Here some 166,060 ha of trembling aspen (*Populus tremuloides* Michx.) stands were defoliated.

Egg-band surveys within infested areas in the Hearst and Cochrane districts indicate that some pockets of infestation may persist in 1995, but a substantial decline is expected in the total area affected.

## **ACTIVITIES PLANNED FOR 1995**

### **Northern Ontario Development Agreement (NODA) Projects**

The FIDS Unit of Ontario is responsible for two NODA projects: namely, creation of a spruce budworm hazard-rating system and development of management guidelines for the jack pine budworm. Work in 1995 will focus on gathering samples and data from the plot networks for these projects and for related work, including the classification of 176 jack pine budworm plots according to the Forest Ecosystem Classification System. Increment core sampling for age will also be conducted in each plot. Accurate geo-reference points will be obtained for both the jack pine budworm plots and for the 225 spruce budworm plots. This work is expected to occupy a good portion of the rangers' field time again this year.

### **Special Gypsy Moth Pheromone Trapping**

The Ontario FIDS Unit is co-operating with Agriculture Canada in a pheromone trapping program to estimate the prevalence of Asian gypsy moth genetic markers in Canadian gypsy moth populations. The methodology includes placing pheromone traps on a 40- x 30-km grid over specific sites, with an intertrap distance of 5 km. Thus, 63 traps will be placed at each location. Traps will be set out about 12 July and collected approximately 6 September. Moths caught in the program will be tested for the genetic markers by Agriculture Canada personnel. FIDS rangers will be responsible for trapping four sites located near Espanola, CFB Petawawa, and the towns of Perth and Huntsville.

### **Acid Rain National Early Warning System (ARNEWS)**

FIDS rangers will continue to monitor the 38 plots that constitute the Ontario portion of the national

ARNEWS. These plots are located in various acid deposition zones and encompass all major tree species found in the province.

Monitoring in 1994 did not disclose any symptoms of acid rain damage and, indeed, reductions in insect, disease, and abiotic damage were observed. Again, the spruce budworm was the most damaging agent encountered. The highest populations recorded, where 75% defoliation occurred, was in a white spruce plot in Gloucester Township, Kemptville District. This insect also caused 30% defoliation of white spruce in a plot in Wiggins Township, Thunder Bay District, and 5% defoliation of black spruce (*Picea mariana* [Mill] BSP.) in plots at Sandel Lake, Sioux Lookout District; Fowler Township, Thunder Bay District; and Margo Lake, Nipigon District. The oak leaf shredder (*Acleris semipurpurana* [Kft.]) caused 6 to 15% defoliation on red oak (*Quercus rubra* L.) in a plot in Gould Township, Sault Ste. Marie District, and the oak webworm (*Archips fervidana* [Clem.]) caused 5 to 10% defoliation of red oak in a plot in Sproule Township, Algonquin Park District. The western gall rust (*Endocronartium harknessii* [J.P. Moore] Y. Hirats) was found on jack pine (*Pinus banksiana* Lamb.) in plots in Mafeking Township and Pine Road, Dryden District; Dance Township, Fort Frances District; and Margo Lake, Nipigon District. Main stem fruiting bodies of the poplar false tinder fungus (*Phellinus tremulae* [Bondartsev] Bondartsev & Borissov) were found on 24% (4 of 17) of the trembling aspen trees in a plot on the Caribou Falls Road, Fort Frances District. Septoria leaf spot (*Septoria betulae* Pass.) caused an average of 10% foliar damage on 35% of the white birch (*Betula papyrifera* Marsh.) in a plot in Priske Township, Nipigon District. Armillaria root rot (*Armillaria ostoyae* [Romagn.] Herink) was associated with the death of five red oak trees in a plot in Gould Township, Sault Ste. Marie District. A number of



other organisms were encountered during the 1994 survey, but numbers were low and associated damage was insignificant.

### Maple Health

The Ontario FIDS Unit participates in the North American Maple Project (NAMP), a Canada-USA study of the health of sugar maple (*Acer saccharum* Marsh.) throughout its range. The Ontario portion of the study consists of 24 plots; half of these are located in producing sugar bush stands and half are in undisturbed forest or woodlot stands. Various parameters relating to stand and site are measured annually. So also is the current crown condition of each tree as well as insect and disease conditions in each stand. An examination of results showed little change in the status of sugar maple in the Ontario plots for the last 3 years, and most stands are generally healthy. The proportion of trees showing little or no dieback ranged from 92.6 to 93.9% (93.9% in 1994) and the proportion of trees in the severe dieback category (>35%) ranged from 1.9 to 2.5% (2.17% in 1994). There was very little difference in the health of trees in sugar bushes and undisturbed stands.

In addition to the North American Maple Project, the FIDS Unit maintains a network of 119, 25-tree plots throughout the range of this species in Ontario. This network consists of 82 plots in woodland situations; 20 rural-roadside plots; and 17 urban plots, which consist mostly of park and boulevard trees.

An analysis of 1994 data showed a slight improvement in the health of woodlot trees; 96% were regarded as healthy compared with 93% the previous year. A total of 3.8% sustained moderate to severe dieback and <1% were dead. In the rural-roadside plots, 84% of the trees were healthy compared with 81% in 1993; 15.7% sustained moderate dieback and <1% were dead. Unchanged from 1993, trees in the urban plots were 90% healthy, with 10% in the moderate to severe dieback category. The higher proportion of healthy trees in the urban category reflects the fact that damaged or diseased trees in these situations are regularly removed before they die.

### Oak Health

The FIDS Unit also maintains a group of 13 plots in mature and semi-mature oak stands in southern Ontario. These will be reexamined in 1995 for the 18th consecutive year. The plots were originally established to measure the effects of heavy infestations of the oak leaf shredder and have been maintained to monitor the long-term health of oak species.

Results of 1994 surveys showed 89.4% of the trees with nil to light dieback symptoms, 9.4% showed moderate to severe dieback, and 1.2% were dead. Overall, oak trees in the plots appear healthy and exhibit normal dieback and mortality rates for trees in these size and age classes.



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